

U.S. Application No. 10/026,961
Amendment dated 08/08/2003
Reply to Office Action of 05/08/2003

Docket No.: 8733.524

Listing of Claims:

1. (Currently Amended) A liquid crystal display device including a data line supplied with a data signal, a gate line supplied with a scanning signal, a pixel electrode for driving a liquid crystal cell, and a thin film transistor for responding to the scanning signal to switch the data signal into the pixel electrode, the device comprising:

a storage electrode overlapping with the gate line forming a storage capacitor; ~~and~~
a first protective layer ~~pattern being formed separately between the storage electrode~~
and the pixel electrode at an overlapping area between the storage electrode and the pixel electrode[[]]; and
a second protective layer formed between the gate insulating film and the pixel electrode.

2. (Original) The liquid crystal display device according to claim 1, wherein said storage capacitor includes:

a gate insulating film on a substrate in such a manner to cover the gate line; and
a semiconductor layer between the gate insulating film and the storage electrode.

3. (Currently Amended) The liquid crystal display device according to claim 1, wherein the first protective layer is ~~separately~~ formed at each lower edge of the storage capacitor area.

4. (Currently Amended) The liquid crystal display device according to claim 2, further comprising:

a gate electrode contacting the gate line on the substrate;
~~a gate insulating film on the substrate;~~
a semiconductor layer on the gate insulating film; and
a source electrode and a drain electrode on the gate insulating film; ~~and~~
~~a protective layer between the gate insulating film and the pixel electrode.~~

5. (Currently Amended) The liquid crystal display device according to claim 4, wherein the semiconductor layer has an active layer and an ohmic contact layer, and the active layer is patterned simultaneously with having the same pattern as the first and second protective layers and the ohmic contact layer is patterned simultaneously with having the same pattern as the source electrode and the drain electrode.

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6. (Currently Amended) A liquid crystal display device including a data line supplied with a data signal, a gate line supplied with a scanning signal, a pixel electrode for driving a liquid crystal cell, and a thin film transistor for responding to the scanning signal to switch the data signal into the pixel electrode, the device comprising:

a storage electrode overlapping with the gate line forming a storage capacitor; and
a pixel electrode covering an upper surface extended into an upper edge and each side edge of the storage electrode[.] and a protective layer patterned on the storage electrode in the overlapping area between the storage electrode and the pixel electrode.

7. (Currently Amended) The liquid crystal display device according to claim 6, wherein the storage capacitor includes:

the gate line formed on a substrate;
a gate insulating film formed on the substrate to cover the gate line; and
a semiconductor layer formed on the gate insulating film and simultaneously patterned as in the same pattern as the storage electrode.

8. (Currently Amended) The liquid crystal display device according to claim 6, further comprising:

a gate electrode ~~corrected~~ connected with said gate line on said substrate;
~~a gate insulating film on said substrate;~~
~~a semiconductor layer on said gate insulating film;~~
a source electrode and a drain electrode on said gate insulating film;
a protective layer on said gate insulating film; and
the pixel electrode on said protective layer.

9. (Currently Amended) The liquid crystal display device according to claim [[8]]7, wherein the semiconductor layer has an active layer and an ohmic contact layer, the active layer being patterned simultaneously with having the same pattern as the protective layer and the ohmic contact layer having the same pattern as being patterned simultaneously with the source electrode and the drain electrode.

10. (Withdrawn) A method of fabricating a liquid crystal display device, comprising:

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forming a gate line on a substrate;

forming a gate insulating film on said substrate to cover the gate line;

forming an ohmic contact layer and a storage electrode by entirely depositing a first semiconductor layer, a second semiconductor layer and a metal layer onto said gate insulating film and then simultaneously patterning the second semiconductor layer and the metal layer into the same pattern;

forming an active layer and a protective layer by depositing an insulating material onto the first semiconductor layer and then patterning the first semiconductor layer and the insulating material; and

forming a pixel electrode by depositing a transparent conductive material onto the gate insulating film and then patterning the transparent conductive material.

11. (Withdrawn) The method according to claim 10, wherein the protective layer is separately formed at each lower edge of the storage capacitor area.

12. (Withdrawn) The method according to claim 10, further comprising:

forming a gate electrode on the substrate;

forming a gate insulating film on the substrate;

forming an ohmic contact layer and source and drain electrodes on the gate insulating film in the same pattern simultaneously;

forming an active layer and a protective layer on the gate insulating film in the same pattern simultaneously; and

forming a pixel electrode on the protective layer.

13. (Withdrawn) A method of fabricating a liquid crystal display device, comprising:

forming a gate line on a substrate;

forming a gate insulating film on the substrate in such a manner to cover the gate line;

forming an ohmic contact layer and a storage electrode by entirely depositing a first semiconductor layer, a second semiconductor layer and a metal layer onto the gate insulating film and then simultaneously patterning the second semiconductor layer and the metal layer into the same pattern;

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forming an active layer by depositing an insulating material onto the first semiconductor layer and then simultaneously patterning the first semiconductor layer and the insulating material; and

forming a pixel electrode by depositing a transparent conductive material onto the gate insulating film at an area extended into an upper edge and each side edge of the storage electrode and then patterning the transparent conductive material.

14. (Withdrawn) The method according to claim 13, further comprising:

forming a gate electrode on the substrate;

forming a gate insulating film on the substrate to cover the gate electrode;

forming an ohmic contact layer and source and drain electrodes on the gate insulating film in the same pattern simultaneously;

forming an active layer and a protective layer on the gate insulating film in the same pattern simultaneously; and

forming a pixel electrode on the gate insulating film.

15. (Currently Amended) A liquid crystal display device, comprising:

first and second substrates;

a gate line and a data line over the first substrate, the data line crossing the gate line to define a pixel region;

a thin film transistor having source and drain electrodes at the crossing of the gate line and data line;

a storage electrode over the gate line;

a pixel electrode over the storage electrode;

a patterned-first protective layer patterned on the storage electrode between the storage electrode and the pixel electrode; ~~and~~

a second protective layer formed between a gate insulating film and the pixel electrode; and

a liquid crystal layer between the first and second substrates.

16. (Original) The liquid crystal display device of claim 15, wherein a pixel electrode of an adjacent pixel region extends over the storage electrode.

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17. (Currently Amended) The liquid crystal display device of claim 15, wherein a storage capacitor is formed between the storage electrode and the gate line and wherein the ~~patterned~~first protective layer overlaps a portion of the storage capacitor.

18. (Currently Amended) The liquid crystal display device of claim 15, wherein a storage capacitor is formed between the storage electrode and the gate line and wherein the ~~patterned~~first protective layer overlaps a lower edge of the storage capacitor.

19. (Currently Amended) The liquid crystal display device of claim ~~[[17]]~~16, wherein the